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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/626,325	07/26/2000	JOHN S. YATES JR.	30585/28	7939

38492 7590 03/24/2004

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EXAMINER

ELLIS, RICHARD L

ART UNIT PAPER NUMBER

2183

8

DATE MAILED: 03/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/626,325

Applicant(s)

YATES ET AL.

Examiner

Richard Ellis

Art Unit

2183

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-30 is/are allowed.
- 6) ☒ Claim(s) 31-33 and 35-43 is/are rejected.
- 7) ☒ Claim(s) 34 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on ____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5.6</u> . | 6) <input type="checkbox"/> Other: ____. |

1. Claims 1-43 are presented for examination.
2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The current title is imprecise.
3. Claims 36, 41, and 43 are rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
 - 3.1. The following terms lack proper antecedent basis:
 - 3.1.1. "the CISC operating system" claim 36, three occurrences;
 - 3.1.2. "the RISC instructions and CISC instructions" claim 41;
 - 3.1.3. "the CISC and RISC operating systems" claim 43;
4. The following is a quotation of the appropriate paragraphs of 35 USC § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. The following is a quotation of 35 USC § 103 which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

(c) Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

6. This application currently names joint inventors. In considering patentability of the claims under 35 USC § 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 USC § 102(f) or (g) prior art under 35 USC § 103.
7. Claims 31-33, 35, 37-38, and 40 are rejected under 35 USC § 102(e) as being clearly anticipated by Hammond et al., U.S. Patent 5,774,686.

Hammond et al. taught (e.g. see figs. 1-9) the invention as claimed (as per claim 31), including a data processing ("DP") system comprising:

- 7.1. a method (fig. 5a) comprising the steps of:
- 7.2. in response to an exception (line marked "EXCEPTIONS" leading from box 210)

raised while executing a program coded in instructions of a first instruction set architecture (210), initiating an execution thread (500a-i) under an operating system coded in instructions of a second instruction set architecture (220); and,

7.3. delivering the exception to the initiated thread for handling by the operating system ("EXCEPTIONS WITH INTERCEPT GATES").

8. As to claim 32, Hammond et al. taught executing a program in a computer comprising a hardware instruction decoder implementing less than an entire architectural definition of the first instruction set, a remainder of the first instruction set being implemented in a software emulator (col. 15 lines 46-57).

9. As to claim 33, Hammond et al. taught that the first instruction set was a complex instruction set having variable-length instructions and many instructions having multiple side-effects (col. 4 lines 60-64), and;

further comprising the step of storing information describing the decoding of the complex instructions into architecturally-visible processor registers of the computer (col. 3 lines 46-56).

10. As to claim 35, Hammond et al. taught in an exception handler (400a-i) coded in the first instruction set (210), saving a portion of the context of the computer, and altering the context of the excepted program before delivering the exception to the operating system (col. 21 lines 50-67).

11. As to claim 37, Hammond et al. taught that the first instruction set and the second instruction set were executed in a common execution pipeline (fig. 8).

12. As to claim 38, Hammond et al. taught a computer (fig. 7) comprising;

12.1. hardware and/or software (fig. 5a) designed to respond to an exception (line from box 210 marked "EXCEPTIONS") raised while executing a program coded in instructions of a first instruction set architecture (210) of the computer by initiating an execution thread (500a-i) under an operating system coded in instructions of a second instruction set architecture (220) and running on the computer;

12.2. hardware and/or software (233) designed to deliver the exception to the initiated thread

for handling by the operating system ("EXCEPTIONS WITH INTERCEPT GATES").

13. As to claim 40, Hammond et al. taught that the first instruction set was a RISC instruction set (col. 3 lines 56-64), being an instruction set having a fixed-length instruction format and a load/store/operate organization (this being the inherent basic definition of a RISC instruction set), and;

the second instruction set is a CISC instruction set (col. 3 lines 52-56), being an instruction set with variable-length instructions and many instructions having multiple side-effects (this being the inherent characteristics of the x86 instruction set to which Hammond et al. refers).

14. Claims 39 and 41-43 are rejected under 35 USC § 103 as being unpatentable over Hammond et al., U.S. Patent 5,774,686, as applied to claims 31-33, 35, 37-38, and 40, supra., in view of Thomas, U.S. Patent 5,386,563.

15. As to claim 39, Hammond et al. did not teach the elements set forth in the claim language. However, Thomas taught exception circuitry (fig. 1-2), effective on recognizing an exception occurring in the program (fig. 4, 24), to architecturally expose in processor registers of the computer information describing a processor state of the computer (26, 28), and to transfer execution to an exception handler (30), and;

pipeline resumption circuitry (fig. 1-2) effective after completion of the software exception handler to resume execution of the program based on the information in the processor registers (32);

the processor registers and general purpose registers of the computer architecturally exposing sufficient processor state and providing sufficient working storage for execution of the exception handler and resumption of the program, without storing processor state to the main memory (col. 2 lines 14-25).

16. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have combined the teachings of Thomas with that of Hammond et al. because of Thomas' teachings that providing the ability to respond to an exception without saving/restoring processor state to/from memory provides significantly enhanced performance for the system (col. 1 lines 22-50, col. 2 lines 14-25, 36-40, and 50-55, and col. 4 lines 16-


23).

17. As to claim 41, Hammond et al. taught that the first instruction set and the second instruction set were executed in a common execution pipeline (fig. 8).
18. As to claim 42, Thomas taught the features described in claim 42 as detailed above in the rejection of claim 39. Claim 42 essentially repeating that which was already specified in claim 39.
19. As to claim 43, Hammond et al. taught that exceptions could be handled in part in each of the CISC and RISC systems (col. 10 line 66 to col. 11 line 3).
20. Claim 34 is objected to as being dependent upon a rejected base claim, but would render the base claim allowable if bodily incorporated into the base claim such that the new base claim included all of the original limitations of the base claim, any intervening claims, and the objected claim.
21. Claim 36 would be allowable if rewritten to overcome the rejection under 35 USC § 112 and to include all of the limitations of the base claim and any intervening claims.
22. Claims 1-30 are allowable over the prior art of record.
23. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) days from the mail date of this letter. Failure to respond within the period for response will result in **ABANDONMENT** of the application (see 35 USC 133, MPEP 710.02, 710.02(b)).
24. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Richard Ellis whose telephone number is (703) 305-9690. The Examiner can normally be reached on Monday through Thursday from 7am to 5pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Eddie Chan, can be reached on (703) 305-9712. The fax phone number for the USPTO is: (703)872-9306.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Richard Ellis
March 10, 2004


RICHARD L. ELLIS
PRIMARY EXAMINER